

Handout 2: An Overview of Thinking Tools that Support Questioning

'What's in a question, you ask? Everything. It is a way of evoking stimulating response or stultifying inquiry. It is, in essence, the very core of teaching.'

John Dewey, 1933

Reasons for Questioning

- develop extend thinking skills
- clarify understandings
- establish links between ideas
- enhance curiosity
- provide challenges
- model problem solving
- obtain feedback on teaching/learning
- develop revision strategies

Types of Questions

- brainstorm
- divergent
- focal
- quiz show
- leading question
- inquiry
- complex
- open
- closed
- rhetorical
- Socratic
- Integrated Questioning

The Divergent Thinking Model

Divergent thinking questions usually begin with these words or phrases:

Imagine...

Suppose...

Predict...

If..., then...

How might...

Can you create...

What are some possible consequences...

Examples of divergent thinking questions:

Can you imagine ways that AFL football typifies Tasmanian culture?

Suppose that the French beat Cook to Botany Bay. In what ways would our history be different?

What predictions can you make regarding the future of Green politics in Tasmania?

How might life in the year 2100 differ from today?

The computer corrects spelling. Is it then unnecessary for primary children to take spelling tests?

Techniques to Stimulate Divergent Thinking

1. *Brainstorming*

Brainstorming is a technique which involves generating a list of ideas in a creative, unstructured manner. The goal of brainstorming is to generate as many ideas as possible in a short period of time. The key tool in brainstorming is "piggybacking," or using one idea to stimulate other ideas. During the brainstorming process, ALL ideas are recorded, and no idea is disregarded or criticised. After a long list of ideas is generated, one can go back and review the ideas to critique their value or merit.

2. *Keeping a Journal*

Journals are an effective way to record ideas that one thinks of spontaneously. By carrying a journal, one can create a collection of thoughts on various subjects that later become a source book of ideas. People often have insights at unusual times and places. By keeping a journal, one can capture these ideas and use them later when developing and organising materials in the prewriting stage.

3. Free-writing

When free-writing, a person will focus on one particular topic and write non-stop about it for a short period of time. The idea is to write down whatever comes to mind about their topic, without stopping to proofread or revise the writing. This can help generate a variety of thoughts about a topic in a short period of time, which can later be restructured or organised following some pattern of arrangement.

4. Mind- or Subject-Mapping

Mind- or subject-mapping involves putting brainstormed ideas in the form of a visual map or picture that shows the relationships among these ideas. One starts with a central idea or topic, then draws branches off the main topic which represent different parts or aspects of the main topic. This creates a visual image or 'map' of the topic which the writer can use to develop the topic further. For example, a topic may have four different branches (sub-topics), and each of those four branches may have two branches of its own (sub-topics of the sub-topic)

*Note: this includes both divergent and convergent thinking.

Divergent Thinking Questions

Quantity questions such as	List How many Give many examples of	which will stimulate flexibility of thinking
Change questions such as	What is the short term and long term significance of What would happen if	which will stimulate creative thinking
Prediction questions such as	Suppose that Tell the outcome of	which will stimulate critical thinking
Point of View questions such as	Justify Give your opinion	which will stimulate affective thinking
Personal involvement Questions such as	What if you were Imagine yourself as	which will stimulate affective thinking
Comparative association questions such as	Compare Find similarities between	which will stimulate analytical thinking
Valuing questions such as	Do you agree that How do you feel about	which will stimulate affective thinking

Bloom's Taxonomy of Thinking

Thinking level (Bloom's)	Focus questions
Remember	Can you describe the facts of the situation?
Understand	Can you show that you understand the situation?
Apply	Can you apply this information to another situation?
Analyze	Can you break this information into parts so that you may understand the structure?
Evaluate	Can you form an opinion or make a judgment and give reasons for it?
Create	Can you create some fresh ideas or new solutions?

Thinkers' Keys

Tony Ryan's 'Thinkers' Keys' are explained further on *Learning, Teaching and Assessment Guide*.

<http://www.ltag.education.tas.gov.au/effectteach/Thinking/thinkerskeys.htm>

The Reverse
 The Consequences
 The Disadvantages
 The Combination:
 The BAR (make something Bigger, Add / Replace something)
 The Alphabet
 The Variations
 The Picture
 The Prediction
 The Different Uses
 The Ridiculous
 The Commonality
 The Question
 The Brainstorming
 The Inventions
 The Brick Wall
 The Construction
 The Forced Relationships

The Alternative
The Interpretation

De Bono's Six Thinking Hats

The six hats of different colours denote the basic types of thinking:

- White hat thinking identifies the facts and what information is missing
- Black hat thinking examines the negative aspects of a topic
- Yellow hat thinking focuses on the positive aspects of a topic
- Red hat thinking looks at a topic from the point of view of emotions and feelings
- Green hat thinking requires creative and lateral thinking about a topic
- Blue hat thinking focuses on metacognition (thinking about the thinking that is required), reflection and the need to understand the big picture.

Socratic Questioning

<http://www.netlearn.discover.tased.edu.au/public/socratesB/index.html>

Use the standard log in for browsing modules as follows:

username: sample

password: discover

This type of questioning fosters critical thinking, evaluation, and knowledge application in students.

- Be sure to allow 'wait time' for thinking to process. Give students time to consider the question and their response before requesting them to answer.
- Avoid yes-no questions. They lead nowhere and do not promote thinking or discussion.
- Avoid the question, "Do you understand?" Replace it with the statement, "Give me an example so I know you understand."
- Be sure students have the needed background and resources to response to the questions posed. It is not fair to expect higher levels of thinking on subjects to which they have not been exposed.
- Open-ended and closed questions are useful. Open-ended questions promote critical thinking, while closed questions can focus attention.

- Include clarifying demands and statements. They are as valid as questions are. Students may need guidance as they sift through possible answers.
- Use questions from all levels of thinking. Help students to develop higher levels of critical thinking as well as the typical knowledge and comprehension levels.

Taxonomy of Socratic Questions

Questions of clarification

What do you mean by ____?

What is your main point?

How does ____ relate to ____?

Could you put that another way?

Is your basic point ____ or ____?

What do you think is the main issue here?

Let me see if I understand you; do you mean ____ or ____?

How does this relate to our problem/discussion/issue?

What do you, Mike, mean by this remark? What do you take Mike to mean by his remark?

Jane, can you summarize in your own words what Richard said? . . . Richard, is this what you meant?

Could you give me an example?

Would this be an example, . . . ?

Could you explain this further?

Would you say more about that?

Why do you say that?

Questions that probe assumptions

What are you assuming?

What is Jenny assuming?

What could we assume instead?

You seem to be assuming _____. Do I understand you correctly?

All of your reasoning depends on the idea that _____. Why have you based your reasoning on _____ instead of _____?

You seem to be assuming _____. How do you justify taking that for granted?

Is that always the case? Why do you think the assumption holds here?

Why would someone make that assumption?

Questions that probe reasons and evidence

What would be an example?

How do you know?

Why do you think that is true?

Do you have any evidence for that?